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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,549	06/30/2003	J. Christopher Matayabas JR.	42P16901	4992

7590 12/16/2003
Todd M. Becker
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EXAMINER

HA, NATHAN W

ART UNIT PAPER NUMBER

2814

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/611,549

Applicant(s)

MATAYABAS ET AL.

Examiner

Nathan W. Ha

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 20-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-19 are drawn to a semiconductor device, classified in class 257, subclass 659.
 - II. Claims 20-37 are drawn to a method of making a semiconductor device, classified in class 438, subclass 123.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case unpatentability of the group I invention would not necessarily imply unpatentability of the group II invention, since the device of the group I invention could be made by processes materially different from those of the group II invention. For example, instead of encapsulating the wires and the die separately, as set forth in claim 20, the process may be carried out simultaneously.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

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4. A telephone call was made to Atty. Becker on December 2, 2003 to request an oral election to the above restriction requirement, the applicant elected Group I without traverse.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-6 and 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Distefano (US 6,309,915).

In regard to claims 1 and 10, in fig. 4, Distefano discloses an apparatus comprising:

a die 2 mounted on a substrate 5, the die being connected to the substrate by a plurality of wires 4; see also, [0028]; and

a mold cap 3 encapsulating the die and the plurality of wires, the mold cap comprising an electrically insulating portion encapsulating the wires and at least a portion of the die and a thermally conductive portion 9 over molded on the die and the electrically insulating portion.

In regard to claims 2 and 11, the die inherently comprises IC circuits.

In regard to claim 3, Distefano further discloses that the insulating material is epoxy; it is type of resin; see also, [0027].

In regard to claims 4-6, the insulating material comprises silica and metal filler, for example, silver; see [0031].

In regard to claim 8, the electrically insulating portion encapsulates the wires and a perimeter of the die; see fig. 4.

In regard to claim 9, Distefano further discloses a heat dissipation device 10 attached to and in thermal contact with the thermally conductive material; see fig. 4.

8. Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Egitto et al. (US 6,206,997, hereinafter, Egitto.)

In regard to claims 1, in fig. 1, Egitto discloses an apparatus comprising:

a die 30 mounted on a substrate 10, the die being connected to the substrate by a plurality of wires 20; and

a mold cap 60 encapsulating the die and the plurality of wires, the mold cap comprising an electrically insulating portion encapsulating the wires and at least a portion of the die and a thermally conductive portion 80 over molded on the die and the electrically insulating portion.

In regard to claim 7, Legato further discloses the insulating portion encapsulates the wires and the entire die.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 10-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Distefano and in view of Wu et al. (US 2003/0092205, hereinafter, Wu.)

In regard to claim 10, Distefano discloses all of the claimed limitations as discussed in claim 1 above except a die attached to a first die, stack structure, for example.

Wu, in fig. 4, discloses an analogous device includes substrate 20, bond wires 280, die 24 and encapsulant 29. Wu further teaches another die 25 which is attached to the first die in order to increase IC circuit in one package.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use stack structure as taught by Wu in

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order to increase ICs, or devices in one package since stack structure would provide more surface area.

In regard to claim 11, see above discussions regarding to claim 2.

In regard to claim 12, the first die, die 24, is a flip-chip bonded to the substrate 20; see fig. 4.

In regard to claims 13-19, see above discussions regarding to claims 3-9.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Ha whose telephone number is (703) 305-3507. The examiner can normally be reached on M-TH 8:00-7:00(EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Nathan Ha
December 3, 2003



LONG PHAM
PRIMARY EXAMINER